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SHUMAKER & SIEFFERT, P. A.
1625 RADIO DRIVE
SUITE 300
WOODBURY, MN 55125

EXAMINER

TANG, KAREN C

ART UNIT	PAPER NUMBER
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2151

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PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

09/851,363

Applicant(s)

JU ET AL.

Examiner

Karen C. Tang

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 05 June 2007.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1,2,4-33,35-71 and 74-85 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1,2,4-33,35-71 and 74-85 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____.

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- This action is responsive to the amendment and remarks file on 12/08/07.
- Claims 1, 2, 4-33, 35-71, 74-85 are currently under examination.

DETAILED ACTION

Response to Arguments

Applicant's arguments with respect to claims 1, 4-14, 32, 35-42, 44, 45, 63-70, 82, and 84 have been considered but are moot in view of the new ground(s) of rejection.

Applicant argues that Fan does not teach or suggest limitations:

an interface concentrator and a forward engine that performs route lookups for the packets received from the at least two removable interface cards.

The examiner disagrees.

First, according to applicant's own claim limitations, "wherein the packet forward engine and the interface card concentrator modules are integrated into a single unit", and a router module comprising a packet forwarding engine and an interface card concentrator module. In another word, the single unit is the router module.

The router module comprises the functionalities that packet forward engine and interface concentrator module offers, and they are: communicate packets from at least two of the removable interface cards with the router module, the router module perform route lookups once the packets being received, and once selected the route, forward the packets back to the plurality of interface cards.

To simplify the entire limitations, one route module, which has capabilities to 1) receive data from “plurality” of interface cards, 2) perform route lookup, select route, and 3) then forward the route back to the plurality of interface cards.

Now, regarding with cited art, first, applicant provides excellent background regarding with the well known information for MACs, however, that is not what is being cited, nor should it be considered, applicant intended to shift the focus away from what is actually being teach from the Fan:

It is being interpreted as an packet processor is being interprets as the router module, the packet processor comprising the functionalities such as the following:

1) received data from “plurality of removable interface cards (please focus on Fig 5 and 6, Fig 5 has indicating that there are plurality of interface cards: multiple ring interface card 30, 32, and tributary interface cards, 52. First, Col 8, Lines 5-10, indicates a node receive data from plurality of ring interface cards to the switch board 38, the processors which is the packet processor is router module, is located within the switching card 38, therefore, now the processor receives the data from plurality of interface cards, the limitation has met.).

2) perform route lookup and select route (packet processor performs table lookup that containing the routing information to route the data to its intended destination, refer to Col 8, Lines 65-67, the limitation met.).

3) forward the route back to the plurality of interface cards (the processor forward the packet back to the plurality of interface cards, refer to Col 9, Lines 5-20).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1, 4-14, 32, 35-42, 44, 45, 63-70, 82, and 84 are rejected under 35 U.S.C. 103(a) as being unpatentable over Fan et al hereinafter Fan (US 6,643,269) in view of Ott (US 7,010,232).

1. Referring to Claims 1, 32, 63, 82, and 84, Fan disclosed a routing device comprising: a plurality of removable interface cards to communicate packets using a network (ring interface cards, refer to Col 8, Lines 5-20); and a router module separate from the plurality of interface cards, the router module comprising a packet forwarding engine and an interface card concentrator module, wherein the interface card concentrator couples the packet forwarding engine to the plurality of interface cards (refer to Col 6, Lines 30-40), wherein the interface card concentrator module communicates packets from at least two of the removable interface cards to the packet forwarding engine, wherein the packet forwarding engine performs route lookups for the packets received from the at least two interface cards by way of the interface card concentrator module, and wherein the packet forwarding engine selects routes for the packets and forwards the packets back to the plurality of interface cards via the interface card concentrator module, and wherein the packet forwarding engine and the interface card concentrator module are integrated into a single unit (since the forwarding engine and interface

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card concentrate module are integrated into a single unit, it is being interpreted that they are as one unit, which is the packet processor, refer to Col 7, Lines 5-35, Col 6, Lines 35-40).

a switch arrangement coupled to the plurality of routing devices and configured to switch control from a first routing device to a second routing device (refer to Col 8, Lines 30-35).

Although Fan disclosed the invention substantially as claimed, Fan is silent regarding the interface cards are removable.

Ott, in an analogous art disclosed the interface cards are not removable (refer to abstracts).

Hence, providing functionality disclosed by Ott , would be desired for user to implement because it can reduce the replacement costs when optical interface cards have failed.

Therefore, at the time of the invention, it would have been obvious to one of ordinary skill in the art to modify the system of Fan by including the features which provides money saving features.

3. Referring to Claims 4 and 35, Fan disclosed at least one memory management circuit to provide data to the interface card concentrator from the packets received from the plurality of interface cards (CPU, refer to Fig 6).

4. Referring to Claims 5 and 36, Fan disclosed a memory coupled to the interface card concentrator (49, 54, refer to Fig 6) and configured to store the data provided to the interface card concentrator module (refer to Col 8, Lines 65-67).

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5. Referring to Claim 6, Fan disclosed wherein the interface card concentrator assembles output bound packets from data stored in the memory and forwards the outbound packets to the plurality of interface (refer to Fig 6 and Col 9, Lines 5-20).

6. Referring to Claims 37 and 38, Fan disclosed wherein the memory (49, 54, refer to Fig 6) is configured to store outbound data (refer to Col 8, Lines 65-67).

7. Referring to Claims 7, Fan disclosed, wherein the interface card concentrator processes inbound packets received from the plurality of interface cards to remove labels from the inbound packets, and stores data from the processed inbound packets in the memory (refer to Col 9, Lines 40-67, processor must remove/encapsulate the label/header in order to process the inbound packets, and store the data to the memory).

8. Referring to Claims 8 and 39, Fan disclosed wherein the memory comprises an SDRAM device (refer to Col 9, Lines 1-5).

9. Referring to Claims 9, 40, and 65, Fan disclosed wherein the memory management circuit is further configured to provide a notification (then sent the data information) to the packet forwarding engine based on information extracted from an incoming data packet (46, refer to Fig 6).

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10. Referring to Claims 10, 41 and 66, Fan disclosed wherein the extracted information includes at least one of source address information, destination address information, source port information, and destination port information (refer to Col 7, Lines 10-15).

11. Referring to Claims 11, 14, 42, 45, and 67, Fan disclosed wherein the packet forwarding module is configured to select a route for packets received from at least two different ones of the plurality of interface cards by referencing a forwarding table based on the extracted information, and wherein the forwarding table stores the route information for forwarding data packets received from any of the plurality of interface cards (refer to Col 6, Lines 35-67 and Col 7, Lines 10-30).

12. Referring to Claims 26, 43, 57, and 79, Fan disclosed a routing engine to store a routing table (47, Fig 6).

13. Referring to Claims 13, and 44, Fan disclosed a memory to store the forwarding table (49, 54, refer to Fig 6)

16. Referring to Claim 68, Fan disclosed wherein the route lookup circuit is configured to select the route by performing a longest prefix match based on the extracted information (refer to Col 6, Lines 38-50).

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17. Referring to Claim 64, 69, Fan disclosed wherein the packet processing circuit is configured to remove an L2 header from an incoming data packet (it is inherent that the packet must first be extracted./remove header information in order to obtain proper destination information, refer to Col 4, Lines 55-60, and Col 7, Lines 35-50 and Col 8, Lines 55-65).

18. Referring to Claim 70, Fan disclosed wherein the packet processing circuit is configured to build an L2 header for an outbound data packet (it is inherent that in order to sent out the data, the header information must be “build”, Col 6, Lines 50-55).

Claims 2, 16-30, 33, 43, 47-61, 71, 74-79, and 81, 83, 85 are rejected under 35 U.S.C. 103(a) as being unpatentable over Fan et al hereinafter Fan (US 6,643,269) in view of Ott (US 7,010,232) and in further view of Wilford et al hereinafter Wilford (US 6,687,247).

19. Referring to Claims 2, 16, 33, 47, 71, 81, 83 and 85, although Fan and Ott disclosed the invention substantially as claimed, Fan is silence regarding a “midplane” coupled between the plurality of removable interface cards and the router module and separating the plurality of removable interface cards from the router module

Wilford, in an analogous art, disclosed a midplane that is in between a physical interface and router module (refer to Col 5, Lines 1-10).

Hence, providing midplane disclosed by Wilford, would be desired for user to utilized and implement in the router system in order to provide data transferring functionality in between the interface and the router module.

Therefore, at the time of the invention, it would have been obvious to one of ordinary skill in the art to have modified the system of Fan by including the feature such as a midplane.

Furthermore, it must be obvious to comprise a midplane which between the removable interface cards and router module, since according to the specification, the midplane functionality is to provide power to the interface cards, and the interface cards according to Fan must have power in order for it to function, therefore, there must be a midplane in between the removable interface cards and router module.

20. Referring to Claim 74, Fan disclosed at least one memory management circuit to provide data to the interface card concentrator from the packets received from the plurality of interface cards (CPU, refer to Fig 6).

21. Referring to Claim 75, Fan disclosed a memory coupled to the interface card concentrator (49, 54, refer to Fig 6) and configured to store the data provided to the interface card concentrator module (refer to Col 8, Lines 65-67).

22. Referring to Claims 20 and 51, Fan disclosed wherein the memory (49, 54, refer to Fig 6) is configured to store outbound data (refer to Col 8, Lines 65-67).

23. Referring to Claims 21 and 52, Fan disclosed wherein the memory comprises an SDRAM device (refer to Col 9, Lines 1-5).

24. Referring to Claims 22, 53, and 77, Fan disclosed wherein the memory management circuit is further configured to provide a notification (then sent the data information) to the packet forwarding engine based on information extracted from an incoming data packet (46, refer to Fig 6).

25. Referring to Claims 23 and 54, Fan disclosed wherein the extracted information includes at least one of source address information, destination address information, source port information, and destination port information (refer to Col 7, Lines 10-15).

26. Referring to Claims 19, 24, 28, 50, 55, 59 and 78, Fan disclosed wherein the packet forwarding module is configured to select a route for packets received from at least two different ones of the plurality of interface cards by referencing a forwarding table based on the extracted information, and wherein the forwarding table stores the route information for forwarding data packets received from any of the plurality of interface cards (refer to Col 6, Lines 35-67 and Col 7, Lines 10-30).

27. Referring to Claims 26, 43, 57, and 79, Fan disclosed a routing engine to store a routing table (47, Fig 6).

28. Referring to Claims 27 and 58, Fan disclosed a memory to store the forwarding table (49, 54, refer to Fig 6)

29. Referring to Claims 17 and 48, Fan disclosed wherein the single module comprises a single printed circuit card that interconnects the packet processing circuit, the memory management circuit, and the route lookup circuit (38, refer to Fig 6).

30. Referring to Claims 18, 49 and 76, Fan disclosed a memory coupled to the packet processing circuit and configured to store incoming data and incoming data. (47 is a type of memory, which stores incoming data, refer to Fig 6).

31. Referring to Claims 25, and 56, Fan disclosed wherein the route lookup circuit is configured to select the route by performing a longest prefix match based on the extracted information (refer to Col 6, Lines 38-50).

32. Referring to Claims 29 and 60, Fan disclosed wherein the packet processing circuit is configured to remove an L2 header from an incoming data packet (it is inherent that the packet must first be extracted./remove header information in order to obtain proper destination information, refer to Col 4, Lines 55-60, and Col 7, Lines 35-50 and Col 8, Lines 55-65).

33. Referring to Claims 30 and 61, Fan disclosed wherein the packet processing circuit is configured to build an L2 header for an outbound data packet (it is inherent that in order to sent out the data, the header information must be “build”, Col 6, Lines 50-55).

Claims 15, 31, 46, 62 and 80 are rejected under 35 U.S.C. 103(a) as being unpatentable over Fan et al hereinafter Fan (US 6,643,269) in view of view of Ott (US 7,010,232) in further view o f Wilford et al hereinafter Wilford (US 6,687,247) and Zadikian et al hereinafter Zadikian (US 6,724,757).

34. Referring to Claims 15, 31, 46, 62 and 80, Fan disclosed a router module to process the data packet and to forward the data packet between the interface modules (refer to Col 9, Lines 20-45).

although Fan, Ott, and Wilford disclosed the invention substantially as claimed, they are silent on disclosed a redundant router processing data in response to the malfunction of the router module.

Zadikian, in an analogous art disclosed a redundant router being utilized in the case of mulfunction (refer to Col 8, Lines 10-25).

Hence, providing a backup function by providing a redundant router disclosed by Zadikian, would be desired for user to utilized in the case when the router failure.

Therefore, at the time of the invention, it would have been obvious to one of ordinary skill in the art to modify the system of Fan by including the features which providing ability to improve the switching speed and minimizes the impact of such redundancy on other connections.

Conclusion

Examiner's Notes: Examiner has cited particular columns and line numbers in the references applied to the claims above for the convenience of the applicant. Although the

specified citations are representative of the teachings of the art and are applied to specific limitations within the individual claim, other passages and figures may apply as well. It is respectfully requested from the applicant in preparing responses, to fully consider the references in entirety as potentially teaching all or part of the claimed invention, as well as the context of the passage as taught by the prior art or disclosed by the Examiner. In the case of amending the claimed invention, Applicant is respectfully requested to indicate the portion(s) of the specification which dictate(s) the structure relied on for proper interpretation and also to verify and ascertain the metes and bounds of the claimed invention.

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Karen C. Tang whose telephone number is (571)272-3116. The examiner can normally be reached on M-F 7 - 3.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Valencia Martin-Wallace can be reached on (571)272-3440. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

KT

Valencia Martin Wallace
SPE ART UNIT 2151